



Aalborg Universitet

AALBORG UNIVERSITY
DENMARK

Summary report on certification of flats and blocks of flats

Report from EPBD Concerted Action II plenary meetings in Warsaw, Lyon, and Prague

Wittchen, Kim Bjarne; Thomsen, Kirsten Englund

Publication date:
2009

Document Version
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

Citation for published version (APA):

Wittchen, K. B., & Thomsen, K. E. (2009). *Summary report on certification of flats and blocks of flats: Report from EPBD Concerted Action II plenary meetings in Warsaw, Lyon, and Prague.*

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

Take down policy

If you believe that this document breaches copyright please contact us at vbn@aub.aau.dk providing details, and we will remove access to the work immediately and investigate your claim.



Certification of flats and blocks of flats

Meeting	Prague
Session	1. Dec. 15:30-17:00 2008
Chair	Kirsten Engelund Thomsen, Denmark
Rappourter	Km B. Wittchen, Denmark
Reviewer	Marjana Sijanec Zavrl, Slovenia
Date	
Files in PC	

LIST OF CONTENTS

1	Executive SUMMARY	2
2	Certification of flats and blocks of flats, session 3 of 3.....	2
3	Programme of the session	2
4	Content of Presentations.....	2
5	Main discussion and outcomes.....	11
6	Conclusion of topic.....	11
7	Future directions	12

1 Executive SUMMARY

2 Certification of flats and blocks of flats, session 3 of 3

This session is the third and final session on certification of flats and blocks of flats. The first two sessions were in Warsaw and in Lyon with oral presentations from Norway, The Netherlands, France, Germany, UK (England & Wales), and the Czech Republic. Furthermore written input to the topic was received from Finland and Spain. Reports from the two first sessions are already at the project centre. After this session a compilation of inputs from all three sessions will be made, with updated information from those countries that presented their situation at the two first meetings.

At this session, presentations on how to carry out certification for flats and/or blocks of flats were given by Portugal, Austria and the Walloon region of Belgium.

3 Programme of the session

- Welcome to the third and final session on certification of flats and block of flats
Kirsten Engelund Thomsen, SBI
- Results from sessions in Warsaw and Lyon on the same topic
Kim B. Wittchen, SBI
- Certification of flats in Portugal
Paulo Santos, ADENE
- Certification of flats and blocks of flats, Experiences from Austria
Christina Spitzbart, Austrian Energy Agency
- Energy Certification of houses, Belgium, Walloon Region
Benoit Fourez, DGO4 - Department of Energy and sustainable Building
- Conclusion of the session and the topic
Kirsten Engelund Thomsen, SBI

4 Content of Presentations

Results from sessions in Warsaw and Lyon on the same topic

The session started with a short recapitulation of the major points of interest from the two previous sessions which are:

- A self assessment method used in Norway. Certificates can be issued based on simple information given by the user, resulting in a conservative energy performance. Two alternative and gradually more advanced methods are valid in Norway. These methods rely on information gathering and cal-



ulation by an expert and this will lead to more accurate energy performance and better recommendations.

- The Netherlands use a method where it is possible to certify either a single flat or a whole block of flats. Certification of a block of flats is done by certifying 6 typical flats depending on location in building. The remaining flats are certified by a copy/paste method. Generally common spaces are included as shares of the flats, but only if it is heated. There is only one calculation tool for both certificates and recommendations.
- France have different ways of certifying a flat (based on metered or calculated values) depending the age, the ownership and the type of heating system. Certificates are issued after inspection for the individual flats and/or the whole building. Two levels of calculations are legal, where the simple method gives a conservative estimate of the label.
- In Germany, existing residential buildings with less than 5 flats generally need to be certified based on calculated performance rating. Other buildings (building owners) have the right to choose between energy certification based on asset or operational rating. The only exception for this rule is residential buildings constructed prior to 1977 with less than 5 flats, which must have calculated rating. Data for issuing a certificate can be collected either the owner or the issuer.
- In England and Wales the owner must identify groups of dwellings with similarities from data records and based around RDSAP software inputs. The Domestic Energy Assessor identify a sample of flats within each group for modelling – and dwellings that should be excluded from the group. This requires external visual inspection. Certification of other flats than the selected ones is done by cloning the sample flats.

It has been the intention to keep the cost of EPC in social housing rented sector e.g. local government housing low as influence of EPCs on energy improvement investment is judged being small. If the whole building changes hands then a separate model is required using SBEM for the common parts e.g. heated corridors, communal areas etc. Multi-residential properties – not self-contained dwellings e.g. with shared bathrooms and kitchens - are modelled using SBEM.

- In the Czech Republic, certification of one flat is allowed, but all flats in the same building will generally have the same label. Energy consumption for the whole building is being calculated and (40–50 %) of the total heating consumption is distributed according to share of the total floor area while the remaining share (60–50 %) is distributed according to measurements in the individual flats and correction factors for location of the flat within the building.

Certification of flats and blocks of flats in Portugal

The implementation process in Portugal is divided in to the following phases:



- 3. July 2006: Revised technical regulations in force for new residential and non-residential buildings,
- 1. July 2007: Certification of new large ($> 1000 \text{ m}^2$) residential and non residential buildings for which construction permit is requested,
- 1. July 2008: Certification of all new residential and non residential buildings (independently of size) for which construction permit is requested,
- 1. January 2009: Certification of all buildings, new and existing, residential and non-residential.

About 66 % of the Portuguese population live in multi family houses. There are 1.3 million multifamily buildings and 2.1 million single family buildings. This means that a good certification scheme for this kind of buildings is important for the market penetration of energy certificates in Portugal. Most of these have individual heating systems, so distribution of heating bills is not a general problem in Portugal.

Certification of multi family buildings is done by the individual flat and it is done by asset rating only. This may lead to different EP labels for each flat. Compared to certification of new buildings, many simplifications have been introduced for existing buildings, and it is possible to make a certificate for an existing building in one day, which includes a mandatory inspection. The cost for issuing a certificate for a flat is 200 €.

In general the recommendations in the certificate are dedicated to the individual although recommendations for the whole block of flats may occur. To implement common block recommendations will require an agreement among all owners in the building, which is not easy.

Until now, no difficulties in the single flat certification approach have been identified. The calculation procedures for each flat in new building can be performed more or less independently of the common structures and systems in a multi-family building.

A centralised computer system creates the certificate with the information provided by the qualified expert. Data is entered in an electronic form at the internet. Data is stored in a central database.

By November 2008, about 15000 certificates were registered in the central system.

Questions

- *How does the assessor make recommendations for the whole building?* Normally the assessor will be reluctant to suggest recommendations for the whole building as these can only be implemented by acceptance from all the residents.
- *How is the energy savings calculated for recommendations for the whole building?* By multiplying with the number of flats in the building.

- *A cost of 200-250 € sounds cheap, how is that possible?* It is possible to do a certification of a flat in ½ - 1 day, so the cost is according to the time used to make a certificate. The cost is of the same magnitude as a certificate in the Netherlands for certification of a flat.
- *An important measure is insulation of thermal envelope, how is that done in an individual flat certificate?* It is possible to give recommendations for the whole block of flats, e.g. the thermal envelope.
- *How about payment for the measures stated for the whole building, how is that distributed to the other flats?* It will normally just be applied to each flat certificate.
- *Can you re-use data from one flat in another?* Yes and the expert can give a cheap proposal for certifying all flats in a whole block of flats. This will normally only be applicable for new blocks of flats, in old blocks there are normally big differences that call upon individual certification.
- *How do you manage collecting data for centralised heating?* That is not a normal situation in Portugal, but inspection of the system is normally done individually, and the expert collect these data, or use standard values from libraries.
- *How do you deal with the issue of 10 flats in the same block being certified by 10 assessors gives 10 different labels and thus recommendations?* Normally the ratings from different assessors are more or less the same – measures are another issue, but different approaches can be used in a constructive way to see it in different ways.
- *What is the cost used for?* It goes to the managing body of the certification scheme – about 60-70 % of the cost goes to QA for the scheme, e.g. re-certification.
- *Is it possible to issue a certificate for a whole building?* No.

Austria

Energy performance certificates always indicate the calculated energy demand of the building and the certificate can be done for either the individual flat or the whole block of flats. The layout of the certificate is the same for the whole building and for the individual flat.

The label for the whole building and for the individual flat do not necessarily has to be the same. The label for the flats depends on the flat's location within the building, possible individual replacement of windows and other improvements to the flat. Furthermore individual living space ventilation rates influences the value of the label.



The cost for the certificate is paid by owner of the flat in case of an individual flat certificate. In case of a whole building certificate, the cost can be paid by the housing organisation, the property developer, or the property management with contribution from all flat owners.

The recommendations given in the certificate apply either to the whole building or the individual flat, depending on the unit that the certificate has been issued for.

Housing companies are likely to prefer certificates issued for the whole building as they are used to this kind of certificates when applying for building permits or subsidies and it is a mandatory routine when selling or renting out a flat. Private owners of an individual flat on the other hand may prefer the individual certificate when selling or renting of the flat, especially if they expect a better label for their flat than for the rest of the building.

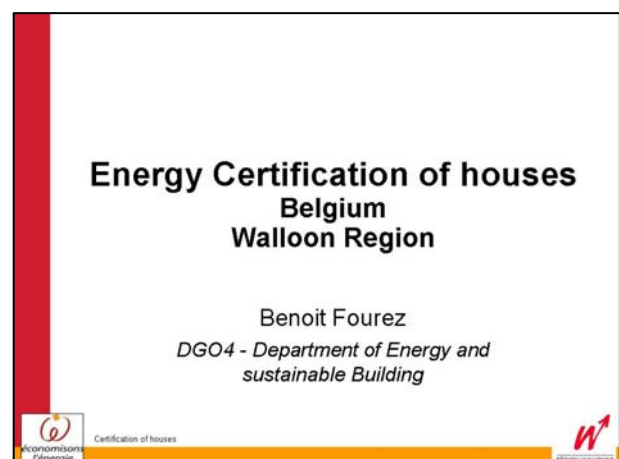
Experiences with certification in Austria so far have been limited as only new buildings (building permit after 1.1.2006), modifications of buildings, and major refurbishment projects were obliged to have a certificate. From January 1st 2009 all existing buildings must have a certificate when being sold or rented out.

Questions

- *What role do subsidies play in Austria?* It is different in different provinces, e.g. major renovations need application to obtain subsidy in some provinces.
- *Is there a problem regarding payment of certificates in case of owner occupied flats?* There is freedom of choice so it is normally not a problem. The cost will often be paid from common expenses in the block of flats.
- *How are the certificates collected?* The certificate is send to the province administrations for building permit application. If the certificate has been issued only for selling a flat, the certificate does not need to go into a central database.
- *How are the costs regulated?* The price for a certificate depends on the provinces and no general indication of the price level be given.

Walloon region

In the Walloon Region of Belgium, there are 1.4 million existing dwellings. Every year about 8000 new dwellings are being constructed and about 60000 dwellings shift hands (renting and selling). To be able to meet the certification requirement it is estimated that about 300 full time accredited experts are needed for the region.



The EPB Decree has been approved by Parliament and published on 19th April 2007.

A calculation method of energy performance is available for some types of new buildings (residential buildings, schools and offices). Accordingly, a calculation method of energy performance for certification of existing residential buildings is finalised. Execution orders for certification are in preparation, including development of tools and training of experts.

Introduction of the requirements are phased:

– from 01/09/08 to 01/09/09

- New buildings must meet Level K45 = Global insulation level (K55 industry), plus maximum U-values and ventilation requirements
- Renovated buildings must meet maximum U-values and ventilation requirements (air entrance if windows are replaced)

– 01/09/09

- New buildings must meet Level E_w 100 and $E_{spec} < 170$ kWh/m² for residential buildings, Level E_w 100 for offices and schools
- New and renovated buildings must meet changed maximum U- and minimum R-values.

– 01/09/11

- Reinforcement of requirements for residential buildings to Level E_w 80 and $E_{spec} < 130$ kWh/m²

Since 2004 there has been a voluntary action for new residential houses: "Build with energy". Furthermore the action aims to prepare the building sector with future statutory requirements. A result of this action is deliverance of an attest to the owner, which is the first step towards certification of dwellings.

Attest « To build with Energy »

Dossier

Habitation à

Architecte :

Maître de l'ouvrage :

Architecte partenaire :

Entreprises partenaires :

ATTESTATION

"CONSTRUIRE AVEC L'ÉNERGIE"

Le Ministre du Logement, des Transports et du Développement Territorial,
en charge de l'Énergie en Région wallonne,
atteste que

la construction sise

réalisée pour le compte du maître d'ouvrage :

est conforme aux critères de performance énergétique établis par la charte "Construire avec l'énergie".

Namur, le 30 janvier 2008,

André Antoine
Ministre du Logement, des Transports et du
Développement Territorial, en charge de l'Énergie

La fiche de calcul du niveau K et la feuille de synthèse des résultats du calcul du niveau Ew précisent les données techniques du bien précité.
Elles sont jointes en annexe à cette attestation et en font partie intégrante.

CONSTRUIRE AVEC L'ÉNERGIE : CRITÈRES DE LA CHARTE APPLIQUÉS AU BÂTIMENT

<p>1. U_{total} [W/m²K] :</p> <p>U_{enveloppe} = 1.52/1.2</p> <p>U_{fenêtre} = 0.16</p> <p>U_{mur} = 0.22</p> <p>U_{paroi sol} = 0.6</p>	<p>3. Système de ventilation :</p> <p>mécanique double flux (système D) avec récupération de chaleur</p>	<p>Installations :</p> <p>→ Chauffage : poêle à pellets</p> <p>→ ECS : poêle à pellets avec préchauffage par panneaux solaires et appoint électrique</p>
<p>2. Niveau K : 27</p>	<p>4. Niveau Ew : 79</p>	<p>5. Surchauffe :</p> <p>pas de risque calculé</p>



Certification of houses





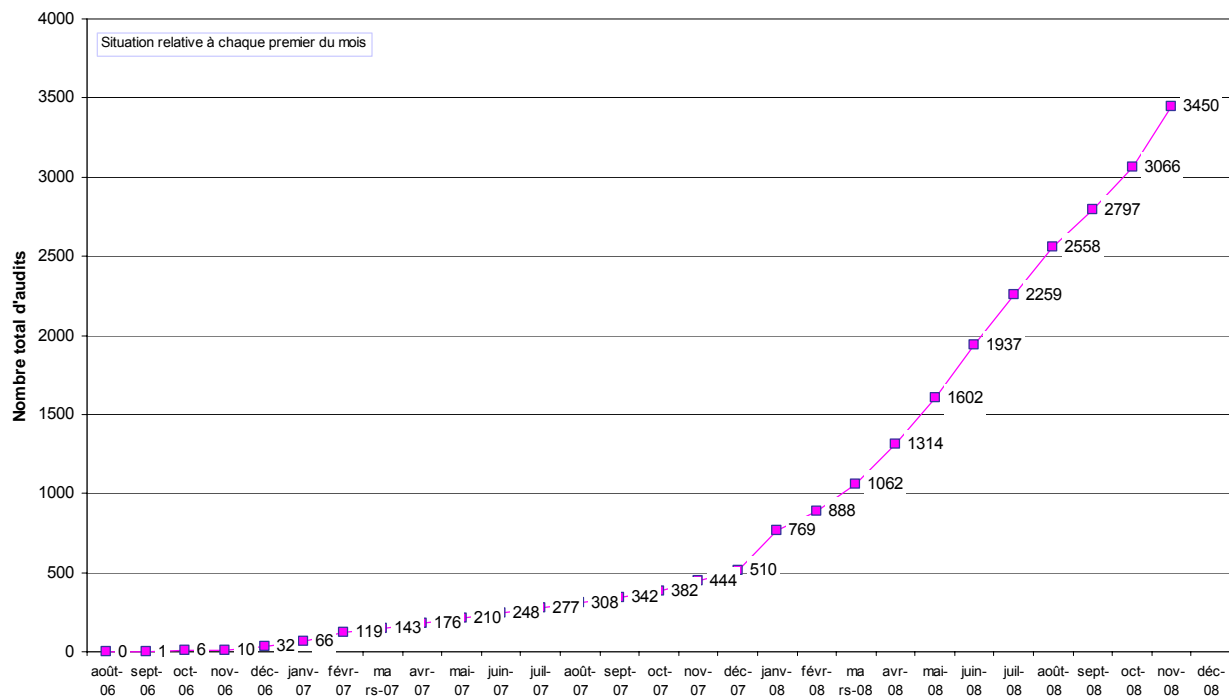
The "To build with energy" action involved 525 architects, 24 research departments, and 109 companies of the building sector. More than 600 projects corresponding to about 1.000 houses have been analysed by Universities and 101 attestations have been delivered.

The Energy Advice Procedure (EAP), which has been operational since 2006, includes a procedure to make an audit of single family houses in a voluntary scheme. This is the base for obtaining subsidies for energy improvements. EAP gives a picture of energy performance of the buildings (labels) separately for shell, heating systems and sanitary hot water production system in standardised conditions. The recommendations for energy savings is based on the real occupation and consumption in the house.

For the time being, the EAP is only possible for existing single family houses. Audits are made by accredited experts having a degree as architect or engineer with additional 5 days training and a final exam. The EAP calculations are performed using standard software. In average it takes more than 1.5 day to complete the audit (collecting data, enter inputs data and explaining the advice to owner). The average cost for an EAP certificate is about 700 €.

The thermal properties of every part of the building envelope are being classified on a ranking scale and have their own label. The recommendations are based on this classification. For each improvement, recommendation the following information is given: energy

savings, savings in terms of money, and pay-back time. Technical documents in relation with recommendations give explanation to improve the performance of insulation or systems.



Number of certificates issued since the beginning of the scheme in 2006.

The intentions before setting up the certification scheme was to have in one hand a certification (mandatory) and in another hand an advise (voluntary) to complement the certification. The assigned label should be based on a decision chart and use of standardised values, resulting in standardised recommendations. The certificate, including the audit should be take about 3 hours to complete and cost about 250 €.

The idea behind the certificate was to give customised recommendations in order to improve energy performance of the building. It shall be possible to take into account information from the owner, even if it is not possible to verify. The method uses real values of occupation or real consumption of the buildings. The estimated time to complete a certificate depends on the complexity of the building, but 1.5 day is as an average value for a single family house is assumed.

For certification of new buildings, the calculation method for the energy certificate is available as it will be the same as the one used in the “To Build with Energy” action. Indicators and layout of the certificate will be finalised in the next few months. Certificate is issued after construction (as-build certificate) base on information from EPB final declaration. The certificate will be issued by public authorities and EPB final declarations will be collected in a central database. Training of experts will begin in April 2009. In case of certification of flats and blocks of flats, every housing unit will receive a certificate.

The calculation method for certification of existing buildings is available and based on the calculation method for new buildings. The certification method will thus be based on asset rating. Indicators and layout of the certificate will be finalised in the next few months and the certificate will be issued by accredited experts (mainly architects and engineers). A guideline for accredited experts is already available and training will begin in September 2009. Every housing unit (flat) gets an individual certificate.

Certification of existing dwellings will start in January 2010. Data from the certificates will be collected in a central database. Execution order is still under redaction and will probably enter into force in phases:

1. selling
 - a. single family houses
 - b. multifamily houses
2. renting
 - a. single family houses
 - b. multifamily houses

The procedure for certification of flats and blocks flats are still under discussion, but the proposal is as follows. Buildings with individual heating system will be certified in the same way as single family houses. In buildings with collective heating system, the audit of collective heating systems is made when certification of the first flat is requested. There will probably be two databases, one for the certificates and one for the results of audits of collective heating systems. Payment for the certificates will be made by the organisation of co-owners regarding the collective heating systems. The payment for certification of the individual flats is done by the individual owner of the flat.

It is the intention to have 3 types of accredited experts:

- accredited experts for certification of single family houses and multifamily houses without collective heating system,
- accredited experts for certification of single family houses and multifamily houses without collective heating system and for Energy Advise Procedure,
- “elite” accredited experts for certification of multifamily houses with collective heating system.

The experts will need to follow a 5 days training programme for carrying out the Energy Advise Procedure and additional 3 more days for carrying out certification. The requested minimum educational background will probably be architects and engineers.

The scale for the labels will probably be 7 classes, each divided in 2 sub-classes. The results presented will be consumption of primary energy (kWh/m² per. year), total energy consumption of primary energy (kWh), CO₂ emissions (tonnes/year), a specific indicator for the building envelope, and a specific indicator for the installations. The limit between

label B and label C is the minimum requirement for new buildings, which is 170 kWh/m² per. year. The limit between D and E come from results in the EAP database and will probably be fixed to 340 kWh/m² per. year. The total scale for residential building will thus be as shown in the table below.

Label	kWh/m ² .a
A	< 85
B	≥ 85 - < 170
C	≥ 170 - < 255
D	≥ 255 - < 340
E	≥ 340 - < 425
F	≥ 425 - < 510
G	≥ 510

Questions

- *Is the plan to have a mandatory label and voluntary advisory report?* There are two things: the certificate, including automatically generated recommendations + advices.
- *Do you anticipate problems regarding the time plan for the implementation?* There will probably be problems with the time scale as implementation will be ready by 2011.
- *The voluntary audit scheme includes a subsidy scheme, how big is that?* In the Walloon region 60 % of the certification cost, up to a maximum certification cost of 600 €, and tax credit up to 40 % of the expenses.
- *Are there large differences between the three Belgian regions?* No, representatives from the regions meet regularly and try to make a common approach, but small differences are pending.

5 Main discussion and outcomes

The discussions were handled after each presentation and are reported in the *Questions* section of each presentation.

6 Conclusion of topic

This third and final session on Certification of flats and blocks of flats showed new ways to certify flats and blocks of flats in three MS. The approaches and progress of the certifications process vary significantly.

It is difficult to have a simple certification method and at the same time provide individual certificates for each flat in a block of flats. There both advantages and disadvantages for certifying each flat individually or certifying the entire block of flats as a whole.

It has been valuable and inspiring for the MS to learn about the different approaches for certification of flats and blocks of flats. Many different approaches are shown in presentations, depending on the certification methods used in the MS (calculated or measured values), age of the building, the ownership, and the type of the heating systems.

A report summarising the different approaches in the MS who gave input to the topic will be compiled early 2009.

7 Future directions

It is recommended to keep focus on this topic and if possible collect information about lessons learned when the certification schemes have been running for 5-10 years, and have been subject to potential revisions in the different MS.